



CROSSTALK

A Publication of the TRW Amateur Radio Club



APRIL 1994 CALENDAR

Every Monday: DCS Net on 145.32 Repeater at 7:30 PM

Every Wednesday: Emergency Communications Team Net on 145.32 Repeater at Noon

Every Thursday: Club Net on 145.32 Repeater at 7 PM, Club news, etc.

Every Friday: Club Breakfast in Bldg S cafeteria, 7-8 AM

Apr 5: Executive Board Meeting, E2/1200, 5:30 PM

Apr 12: Eyeball QSO meeting at Petrelli's, 230 N Aviation, M.B., 5:30 PM,

Apr 12: Emergency Communications Team Meeting, R3/1413, Noon

Apr 15: Technical Chairman's Meeting, Bldg 65 Shack, Noon

Apr 29-May 1: West Coast VHF/UHF Conference, Cerritos

Apr 30: Swap Meet, Parking lot, NW corner of Aviation & Marine, 7-11 AM, T-HUNT at Noon

EDITORS NOTES: The deadline for CROSSTALK submissions is the club meeting on the first Tuesday of each month. If you have something and will be later than that please call and I will try to accomodate you.

MEETING CHANGES: The Club Evening Meetings and the EBM have been swapped on the calendar. We had to do this to arrange the meeting location, Petrelli's was booked the first Tuesday.

Shack Move Postponed: The TRW board of directors decided to keep Odyssey alive and as a result they need the R9 penthouse for some experiments. The shack will remain in Bldg 65 for the near term. Frank Cartier is working with facilities to find us a new home.

BBS CHANGES: SYSOP Dave Hassall moved the BBS to his home QTH on Saturday February 26 to make maintainance and update easier. The new phone number is 310-530-6848.

NEWCOMERS EQUIPMENT GUIDES

by Bill Shanney, KJ6GR

This series of articles is aimed at the first time equipment buyer who has limited technical knowledge. The material presented will be oriented toward making an intelligent purchase. I will include references for those who wish to increase their technical knowledge. Planned topics include HF Transceivers, VHF/UHF Transceivers, VHF/UHF Hand-Held Transceivers, Station Accessories and VHF/UHF Antennas. If there are other topics you would like to hear about please let me know. I'm still searching for a volunteer to write about getting started in Packet and other digital modes. At the very least I will provide a bibliography of basic articles and books on this topic.

The Christmas Crew At The TRW ARC Swap Meet



For Sale: Kenwood TS830S transceiver, SP230 Speaker, MC50 microphone, and Cushcraft R5 Vertical antenna (10, 12, 15, 17, 20) \$600/OBO. Frank 814-6500

NEWCOMERS EQUIPMENT GUIDE:

HF Transceivers

There are a large variety of HF transceivers available today and just one look at the front panel can be intimidating. In this article I'll attempt to educate the reader on what specifications are important and why and present my own opinion on the usefulness of the various features available.

Transmitter

The majority of HF rigs on the market today put out 100 watts on SSB and CW. They all must meet FCC signal purity requirements. For single sideband operation two modes are usually provided, manual where you push a switch to transmit (often referred to as push-to-talk) and voice actuated switching or VOX where the transmitter is activated automatically when you speak. Serious SSB operators will want the VOX adjustments to be readily accessible while operating to permit adjustment to account for background noise levels. A speech processor is nice to have during poor or crowded band conditions. This circuit increases the average power transmitted which makes your signal louder at the receive end but it does make the voice sound harsh. Most operators prefer non-processor operation whenever possible.

For CW operation a built in keyer is a handy feature but most serious CW types use external keyers so I wouldn't make a decision based on this feature. I'll discuss external keyers in the accessory installment of this series. A power output adjustment is mandatory on my list, we should always use only enough power to communicate, for local QSOs I rarely use more than 25 watts. This helps minimize congestion (QRM) on our bands. If you think you may eventually get a linear power amplifier you will need to adjust its power input for proper operation.

Receiver

Modern receivers have excellent sensitivity. A receiver preamplifier is required for the higher frequency bands. The ability to switch it off or switch attenuation (loss) in front of the preamp is required to prevent front end overload due to noise on the low bands or strong local signals on any band. The front end or input electronics of any receiver is not perfectly linear. The transistors and diodes used to make preamps and mixers all exhibit some degree of nonlinear behavior. This causes weak signals to be suppressed in the presence of very large signals (blocking) and signal mixing which produces new, unwanted signals or intermodulation products. The dynamic range of a receiver is the range of signal levels it can respond to, from the smallest to the largest. More is better since you want to be able to copy small signals with big signals present close in frequency.

I always rely on the ARRL Lab results published in QST for receiver performance comparisons. A good receiver will have a blocking dynamic range of >100 dB. As far as I'm concerned, the higher the better here in this metropolitan area with lots of big signals. An intermodulation dynamic range of > 90 dB is adequate for most purposes. These numbers are the case where the preamp is on, turning it off can help dynamic

range when big signals are close to the signal you are listening to. If the dynamic range is noise limited that means the local oscillator has high phase noise, I'd stay away from rigs that have this problem as it degrades dynamic range with no interfering signals present. The ARRL Radio Buyers Sourcebook contains reviews of most popular rigs from 1981 to 1991 and Volume 2 of this book covers 1991 through 1992. These reviews include test data on dynamic range and sensitivity. A careful comparison of test data is a big help in deciding which rig is a better choice.

Most modern transceivers have a noise blanker which reduces most types of man made noise. An audio filter, either band pass or peaking, is nice but accessory filters are more versatile (more on this in the accessory installment). The standard IF filter is 2.1 - 2.3 KHz wide which is fine for SSB. If you ever plan to operate CW I strongly recommend a 500 Hz filter. This narrow filter, standard in some rigs, optional in others, is required to reject close in interfering signals and also improves the dynamic range of the receiver.

The RIT or Clarifier control is handy for tuning in stations that call you slightly off from your transmit frequency. I personally think of this as mandatory but the same function can be obtained using the dual VFOs that are found in all modern rigs. You can use VFO A for receive and B for transmit for example. The XIT or transmit offset allows you to move your transmitter above or below a stations frequency. This is handy for DXing when the DX station tells you he will listen 5 KHz up for callers. Again this can be done with the dual VFOs.

A notch filter is useful when there is a strong carrier you want to eliminate such as someone tuning up on top of a SSB station. The IF shift and passband tuning controls allow you to move interfering signals out of the IF passband by shifting the passband up or down in frequency or changing the IF bandwidth (or both).

There are other transceiver features that appeal to some operators but I don't feel are basic requirements such as memories. The major manufacturers, ICOM, Kenwood, Ten Tec and Yaesu, all offer a range of fine transceivers. I recommend trying several rigs, talking to active hams and reading the QST reviews before making your first purchase. Since Ten Tec only sells factory direct, they offer a 30 day money back guarantee on their products.

References

The ARRL Handbook, Newington, CT: ARRL (published yearly)

R. Bloom, "The Elusive Numbers Relating to Receiver Performance", Communications Quarterly, Summer 1992, pp. 98 - 100.

J. Dyer, "Receiver Performance", Communications Quarterly, Summer 1993, pp. 73 - 88.

EMERGENCY COMMUNICATIONS AT TRW

By Rich Sauer, N6CIZ
TRW/ARC Emergency Coordinator

The earthquake that shook us all out of bed at 4:31 A.M. on January 17th was a wake up call for a lot of people. It reminded them of how unprepared they are to face a large-scale disaster.

This was not the case with a group of TRW Amateur Radio Club members known as the Emergency Communications Team or ECT for short. On that Monday morning, the ECT members sprang into action by checking in on the W6TRW 2-meter repeater after the initial shaking stopped. It was quickly determined that damage in the South Bay was minimal. Two members, Bryan, KN6OW, and Ray, KD6IGI, traveled to TRW within minutes of the quake and confirmed that only minor damage had occurred to Space Park buildings.

Because of the lack of problems at TRW, the team did not have a formal net, but let the L.A. County DCS group, K6CPT, use the repeater for their net which coordinated communications throughout the county. As the day wore on, the TRW ECT did pass quake-related traffic and assisted Security in TRW's Emergency Operations Center.

All of this activity went smoothly due to the hard work of the ECT volunteers who have spent many hours planning and preparing for an incident like the January earthquake.

The Emergency Communications Team is made up of members of the TRW Amateur Radio Club who have volunteered to help the company cope in a disaster or emergency situation. Any TRW Radio Club member who works at TRW is eligible to join the team. The only other qualification is dedication. Volunteers must be willing to take part in weekly nets, monthly meetings and various training sessions and drills.

The team concentrates its efforts on Space Park with its large population of employees but also is tied in with local cities and other large companies in the South Bay area. They have provided communications for events as varied as building evacuation drills, actual fires, area-wide disasters, riots, air shows, 10K runs, harbor clean ups and parades. Any event requiring communications is a good training ground for team members.

The team will be supporting the Earthquake Expo in Torrance on April 23rd where the van will be on display and team members will demonstrate amateur radio communications to visitors at the Expo.

Thanks to the efforts of Eric Tatnall of the TRW Emergency Preparedness Office, team members have been granted special permission by Security to carry hand held radios into TRW buildings. Only recognized team members have this privilege as Security has recognized the ECT's critical role. Team members also carry special ID cards that allow them to have access to areas deemed "off limits" to other employees during an emergency or disaster. The team also publishes its own newsletter detailing happenings in the emergency communications world.

The team maintains a complete amateur station Building R3 with radio capability from HF through 1.2 GHz, ATV and packet. It also has a complete mobile communications van that mirrors the capability of the fixed station. You may have seen the van at the TRW/ARC swap meet or at Field Day and other ham radio contests.

If you are interested in emergency communications, join us on our weekly net every Wednesday at noon on the W6TRW 2-meter repeater. Or come to our monthly meeting on the second Tuesday of each month in the Emergency Operations Center in R3. If you'd like to join the team, we'd love to have you. The pay is lousy but the satisfaction makes it all worth while.

Recent Books

I hear a lot of discussions about the complexities of packet radio operation at club meetings and other ham gatherings. I'm no packet expert nor am I a computer whiz but I have managed to become packet literate through a combination of reading books, advice from others and trial and error. I recently upgraded my PK-232 (1988 vintage) to add the latest mailbox features and pactor. I also decided to try to learn a little more about packet operating, checking into the DX packet cluster and sending and receiving mail on the local BBS is not very challenging. I bought a copy of "Your Packet Companion" by Steve Ford, WB8IMY (ARRL, 1992) thinking that it might be good to review the basics.

I was pleasantly surprised by this introductory guide. Every aspect of packet operation is covered from bulletin boards to advanced techniques and satellites. The reader is led through the basics TNCs, computers, radio interfaces and basic operating. The often confusing amount of information found on the packet screen is explained. BBS and packet cluster operation is also described in the author's easy to read style.

The chapter on packet operating is particularly good. It gives clear examples of how to connect, call CQ, use a BBS and send mail. There are many sidebars which provide useful operating tips and tables of BBS commands to help novice operators get started or jog the occasional operators memory. This book deserves serious consideration from any inexperienced or infrequent packet operator and is a bargain at only \$8.

HF antennas continue to be a very popular topic in amateur radio literature. There are many excellent textbooks and handbooks on antenna theory. "The ARRL Antenna Book" contains all the average ham needs to know about antenna theory and design. There is another excellent amateur antenna guide that approaches the subject differently and contains many novel ideas not presented elsewhere. "HF Antennas for All Locations" by Les Moxon, G6XN (2nd Edition, RSGB, 1993) deserves to be in every active HF operators library. Many topics and designs presented in this book are not covered in other sources. Moxon's down to earth discussions of antenna theory are very helpful to those without a theoretical background in electromagnetics. This second edition was extensively revised and updated. Many new novel multiband antenna designs without lossy traps are presented. There is also a new chapter on small antennas.

Moxon presents a lot of practical ideas in his discussions and provides some excellent information on the effect of the local environment on antenna performance. This is one of the most used books in my extensive antenna library.

73 de KJ6GR

"New Ham Companion" Series in QST

The ARRL is making a concerted effort to help new hams with this new QST series. A considerable amount of space is being devoted to topics of interest to novices and technicians. "The Doctor is IN" answers commonly asked questions on a wide variety of topics. During the past few months the following short articles have appeared:

- DXing with 2 meter Packet Mail
- Test Day
- A Cheap Way to Hunt Transmitters
- Where's My Mail?
- Do You Need an Antenna Tuner?
- HF Mobiling - Taking it to the Streets
- The Frequency and Deviation Conspiracy
- The Lure of the Ladder Line
- Radio and Railfanning

The material in these articles is professionally presented with a minimum of theory, plenty of how to examples and the topics are of current interest. The ARRL has hit the mark with this new feature in QST.

If you are not an ARRL member, consider joining. The ARRL is the largest ham organization in the U.S. and has considerable influence on our hobby. Our voices are heard through our local section manager and division director and our opinions do make a difference. If you want a say in the future of Amateur Radio ARRL membership is a must. Their excellent magazine QST is worth the price of membership alone.

73 de KJ6GR